

PEER REVIEW PLAN

BUBBLY CREEK, SOUTH BRANCH OF THE CHICAGO RIVER, ILLINOIS

FEASIBILITY STUDY

Prepared By:

U.S. Army Corps of Engineers
Chicago District



February 2008

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1. Purpose and Guidance.

A. This document outlines the peer review plan for the Bubbly Creek, South Branch of the Chicago River Feasibility Study. EC 1105-2-408 dated 31 May 2005 “Peer Review of Decision Documents” 1) establishes procedures to ensure the quality and credibility of Corps decision documents by adjusting and supplementing the review process and 2) requires that documents have a peer review plan. The Circular applies to all feasibility studies and reports and any other reports that lead to decision documents that require authorization by Congress. A Feasibility Report that will potentially lead to Congressional Authorization will be developed and is therefore covered by the Circular.

B. The Circular outlines the requirement of the two review approaches: independent technical review (ITR) and external peer review (EPR), and provides guidance on Corps Planning Centers of Expertise (PCX) involvement in the approaches. This document addresses review of the decision document as it pertains to both approaches and planning coordination with the appropriate Center.

- i. ITR. Districts are responsible for ensuring adequate review of the technical aspects of decision documents is accomplished through the ITR approach. ITR is a critical examination by a qualified person or team that was not involved in the day-to-day technical work that supports the decision document. ITR is intended to confirm that such work was done in accordance with clearly established professional principles, practices, codes, and criteria. In addition to technical review, documents should also be reviewed for their compliance with laws and policy. Potential policy issues can be raised during ITR, but ultimate policy determinations are left to the vertical team. The Circular also requires that DrChecks (<https://www.projnet.org/projnet/>) be used to document all ITR comments, responses, and associated resolution accomplished.
- ii. EPR. The Circular added external peer review to the existing Corps review process. This approach does not replace the standard ITR process. The peer review approach applies in special cases where the magnitude and risk of the project are such that a critical examination by a qualified person or team outside the Corps is necessary. EPR is also used where information is based

on novel methods, presents complex interpretation challenges, contains precedent-setting methods or models, or is likely to affect policy decisions that have a significant impact. The degree of independence required for external peer review increases as the project magnitude and project risk increase. Districts along with the PCX are responsible to ensuring adequate review of the technical aspects of the decision documents is accomplished through the EPR approach when warranted.

(a) Projects with low magnitude and low risk may use a routine ITR.

(b) Projects with either high magnitude/low risk or low magnitude/high risk would require both Corps and outside reviewers on the ITR team to address the portions of the project that cause the project to rate high on the magnitude or risk scale.

(c) Projects with high magnitude and high risk require a routine ITR as well as an EPR.

iii. PCX Coordination. The Circular outlines PCX coordination in conjunction with preparation of the review plan. Districts should prepare the plans in coordination with the appropriate PCX. The Corps PCX is responsible for the accomplishment and quality of ITR and EPR for decision documents covered by the Circular. Centers may conduct the review or manage the review to be conducted by others. Reviews will be assigned to the appropriate Center based on business programs. The Circular outlines alternative procedures to apply to decision documents. Each Center is required to post review plans to its website every three months as well as links to any reports that have been made public. The Office of Water Project Review (OWPR) will consolidate the lists of all review plans and establish a mechanism for soliciting public feedback on the review plans.

2. Project Description.

A. Decision Document. The Feasibility Study will produce a Feasibility Report (FR), accompanied by an environmental document that complies with National Environmental Policy Act (NEPA). This report will provide the basis for a decision by the U.S. Congress to authorize construction of a Federal project. The feasibility phase of this project is cost shared 50/50 with the project sponsor, the City of Chicago. The report will provide planning, engineering, and implementation details of a recommended restoration plan to allow final design and construction to proceed subsequent to the approval of the plan.

B. Study Area. The study area includes the entire 1.25 mile channel and areas draining to the South Fork of the South Branch of the Chicago River, colloquially referred to as “Bubbly Creek” located entirely within the City of Chicago, Cook County, Illinois. A once sluggishly flowing channel that drained an area of 5 square miles of wetlands has

since been severely altered by human development. Bubbly Creek was once a pristine wetland system that provided natural aquatic and terrestrial habitats for fish, bird, and mammal species. Bubbly Creek has endured major physical alterations including deepening and widening of the channel, creation of sheet pile banks, complete filling of wetlands within the original drainage area, severe hydrologic alterations including a major increase in drainage area, and introduction of polluted sediments and runoff. Today, the Bubbly Creek channel drains a 30 square mile area of metropolitan Chicago, begins near Racine Avenue and 38th Street at the Racine Avenue Pumping Station (RAPS), and flows north into the South Branch of the Chicago River near Ashland Avenue.

C. Problems and Opportunities. Bubbly Creek faces a complex series of problems that contribute to severe ecosystem degradation and which must be solved in order to allow for successful ecosystem restoration. Stagnant flow conditions, combined sewer overflows, poor sediment quality and poor water quality all contribute to the degradation of habitat and biological integrity and must be addressed in order to provide sustainable conditions for ecosystem restoration. Successful ecosystem restoration is dependent upon restoring the conditions needed for sustainability. Opportunities include:

- Improve stagnant flow conditions
- Reduce ecosystem impacts of combined sewer overflows
- Improve sediment quality for benthic habitat
- Improve water quality conditions in support of habitat restoration
- Provide diverse aquatic and related habitat structure
- Improve river corridor aesthetics
- Provide additional economic and social benefits
- Provide safe recreational opportunities compatible with ecosystem restoration

D. Product Delivery Team. The product delivery team (PDT) is comprised of individuals from the Chicago District, City of Chicago and the Metropolitan Water Reclamation District of Greater Chicago directly involved in the development of the decision document. Contact information and disciplines are listed below.

Name	Organization	Discipline
	CELRC-PM-PL-E	Study Manager
	CELRC-PM-PM	Project Manager
	CELRC-PM-PL-E	Fish Biologist
	CELRC-PM-PL-E	Archeologist
	CELRC-TS-DH	Environmental Engineer
	CELRC-TS-DH	Hydraulic Engineer
	CELRC-TS-DC	Civil Engineer

	CELRC-TS-DC	Cost Engineer
	CELRC-TS-DG	Geotechnical Engineer
	CELRE-RE	Real Estate Specialist
	City of Chicago Dept. of Environment	Environmental Engineer
	City of Chicago Dept. of Planning and Development	City Planner
	City of Chicago Office of the Mayor	Assistant to the Mayor
	City of Chicago, Dept. of Water Management	Engineering Dept.
	Metropolitan Water Reclamation District of Greater Chicago	Engineering Dept.
	Metropolitan Water Reclamation District of Greater Chicago	Research and Development Dept.

E. Vertical Team. The Vertical Team includes District management, District Support Team (DST) and Review Integration Team (RIT) staff as well as members of the Planning of Community of Practice (PCoP).

Name	Organization	Discipline
	CELRC-PM-PL-E	Chief, Environmental Formulation and Analysis Section
	CELRC-PM-PL	Chief, Planning Branch
	CELRC-PPPD	Deputy for Project Management
	CELRD-PDS-G	District Liaison
	CELRD-PDS-P	Chief, Planning and Policy
	CECW-LRD	RIT manager
	CECW-PC	Office of Water Project Review Manager

F. PCX Team. The National Ecosystem Planning Center of Expertise (ECO-PCX) located within MVD is the appropriate PCX for this document. The following team members are part of the ECO-PCX.

	CEMVD-PD-N	ECO-PCX Director
	CEMVD-PD-N	ECO-PCX Deputy Director
	CEMVD-RB-T	ECO-PCX Deputy Director
	CEMVR-PM-F	ECO-PCX Action District Lead

3. Assessment of Project Risk and Magnitude.

An initial project risk assessment was conducted by the study manager. Ultimately, the assessment of risk will be defined in coordination with the entire project team and the respective PCX. For this exercise, an assessment was made of the risk associated with this project based upon the factors discussed in EC 1105-2-408 paragraph 4.b and the project was rated quantitatively among five levels of project risk, ranging from low to high (risk score class). All factors were weighted equally and are described further below. The rater considered previous experiences in this basin gained through the development of the Reconnaissance Study and other similar projects when making this analysis. No attempt was made to tie this risk to a national scale of rating; however, it is assumed that the PCX will bring this perspective to their assessment of the rating.

- Project risk inherent in project complexity is handled in the first group of items and deals with the potential that the project will fail after it is ultimately constructed.
- Customer expectation risk is a measure of the level of expectation of the sponsor and the risk that we may not be able to meet their expectations.
- Staff technical experience was assessed as a low degree of risk if the staff had a high level of ecosystem restoration experience, and a high degree of risk if the staff had minimal experience.
- The impact of project failure and the subsequent consequences are determined based on preliminary future without project scenarios in conjunction with sponsor and technical team member input.
- The project schedule and cost were assessed a low degree of risk if they both remained flexible, and a high degree of risk if the project schedule and cost were to become fixed.

Preliminary implementation costs were developed during the development of the 905(b) Reconnaissance Report and were based on other ecosystem restoration projects in the area and professional judgment. Since the causes of degradation facing Bubbly Creek are quite unique, complex solutions are necessary for restoration. Many unit cost values from other projects were not available for use because some technologies proposed for Bubbly Creek are new and have not been implemented elsewhere. For example, sediment capping costs can vary greatly depending on the materials used and thickness required for this application. The preliminary implementation costs for three of the plans outlined in the Reconnaissance Study are shown in the table below are meant to provide a relative basis for comparison only. A detailed and more reliable cost estimate will be developed during the feasibility phase.

Plan	Construction Activity	Cost (x \$1,000)
Low-Flow Restoration	Low Flow Restoration (Pump, Conveyance Pipe, and Inlet/Outlet Structures)	2,500
	Sub-Total	2,500
	Contingency (25%)	625
	Estimated Total Construction	3,125
Low-Flow Restoration, Sediment Remediation, and Ecosystem Restoration	Low Flow Restoration (Pump, Conveyance Pipe, and Inlet/Outlet Structures)	2,500
	Sediment Capping	15,000
	Limited Sediment Dredging and Disposal	2,000
	Riparian Site Prep and Earthwork	1,500
	Riparian and Wetland Vegetation	3,000
	Sub-Total	24,000
	Contingency (25%)	6,000
	Estimated Total Construction	30,000
Low-Flow Restoration, CSO Elimination, Sediment Remediation, and Ecosystem Restoration	Low Flow Restoration (Pump, Conveyance Pipe, and Inlet/Outlet Structures)	1,500
	CSO Diversion Structures (Channel Diversion Pipes and Inlet/Outlet Structures)	84,000
	Sediment Capping and Meander Channel Construction	10,000
	Riparian Site Prep and Earthwork	1,500
	Riparian and Wetland Vegetation	3,000
	Sub-Total	100,000
	Contingency (25%)	25,000
	Estimated Total Construction	125,000

As shown in the table of estimated construction costs above, the magnitude of project varies greatly depending on the measures implemented. During the development of the feasibility study, the costs and benefits of these plans along with others newly formulated will be evaluated and compared in order to select a recommended plan. Should the estimated implementation costs for the recommended plan exceed \$45 million; the decision to perform an EPR will be revisited based on the Water Resources Development Act (WRDA) of 2007 implementation guidance. The WRDA of 2007 includes provisions that require an EPR for projects that exceed \$45 million.

The score for the risk items were summed and the average value of the risk assessment scores was used to determine overall project risk level as shown in the table below. Based upon this initial assessment, the project is projected to carry medium level of risk with a score of 3.4. Assuming the recommended plan would fall below the \$45 million WRDA '07 cutoff, the assessment of project magnitude was determined to also have a

score of 3.5, which is medium. A summary of initial project risk and magnitude assessment is shown in the table below.

Assessment Item	Assessment Score (Low Degree to High Degree)					Score
	Low		Medium		High	
PROJECT RISK:						
Potential for Failure	1	2	3	4	5	3
Uncertainties of Predictions	1	2	3	4	5	4
Long Term Cumulative Effects / Customer Expectations	1	2	3	4	5	4
Staff Technical Experience	1	2	3	4	5	2
Failure Impact and Consequences	1	2	3	4	5	4
Average Project Risk Assessment Score:						3.4
PROJECT MAGNITUDE:						
Product Schedule/Cost	1	2	3	4	5	3
Project Complexity	1	2	3	4	5	4
Project Benefits	1	2	3	4	5	4
Project Scale	1	2	3	4	5	3
Average Project Magnitude Assessment Score:						3.5

4. ITR Plan.

A. General. As outlined above, the District is responsible for ensuring adequate technical review of decision documents. The responsible PDT District of this decision document is Chicago District (LRC). An ITR Manager shall be designated for the ITR process and it will be recommended that they be selected from outside the MSC. At this time, the ITR team has not been selected for this study. The ITR Manager is responsible for providing information necessary for setting up the review, communicating with the Study Manager, providing a summary of critical review comments, collecting grammatical and editorial comments from the ITR team (ITRT), ensuring that the ITRT has adequate funding to perform the review, facilitating the resolution of the comments, and certifying that the ITR has been conducted and resolved in accordance with policy.

B. ITR Team. The ITRT will be comprised of individuals that have not been involved in the development of the decision document and will be chosen based on expertise, experience, and/or skills. The members of the ITRT will roughly mirror the composition of the PDT. The ITRT will be lead by a regional technical specialist and will be selected through coordination with the MSC and ECO-PCX. It is recommended that the ITR Manager be designated from outside the MSC. Members of the ITRT have not yet been selected because the feasibility study has just been initiated. Cost estimates of project

features will be ITR'd by the Cost Engineering Center of Expertise located at the Walla Walla District. The areas of expertise for the ITRT members are:

Name	Organization	Title
TBD	TBD	Regional Technical Specialist, Plan Formulation; Lead for ITR
TBD	TBD	Biologist
TBD	TBD	Environmental Engineer
TBD	TBD	Hydraulic Engineer
TBD	TBD	Geotechnical Engineer
TBD	TBD	Cost Engineer
TBD	TBD	Realty Specialist

C. ITR Process. The process for completing the ITR is laid out as follows:

- i. The Study Manager will coordinate with the PDT to provide draft versions of reviewable products in electronic format to ITRT members. Hard copies can be provided to the ITRT upon request.
- ii. Members of the ITR team will provide comments using DrChecks. Comments will reference laws, policy, guidance, engineering manuals, professional principles, practices, codes, and criteria. Reviewers will also suggest action to be taken by PDT for resolution. Open ended comments without specific references are discouraged. Comments will be provided within an agreed upon timeframe laid out below.
- iii. The PDT will review comments, incorporate changes, and formally respond to comments citing edits in revised documents. Conference calls will be used to resolve any conflicting comments and responses. A revised electronic version of the report and appendices with comments incorporated will be made available to the ITRT during back checking of the comments.
- iv. Members of the ITR team will backcheck responses to ensure comments were adequately addressed. Fully resolved comments will be closed out. Reviewers may “agree to disagree” with any comment response and close the comment with a detailed explanation. In the event that a comment can not be resolved, reasons for the impasse will be documented DrChecks and the issue will be elevated up through the vertical team. All efforts shall be made to come to an agreeable solution prior to elevating the issue. ITRT members shall keep the ITR manager apprised of problematic comments. The vertical team will be informed of any policy variations or other issues that may cause concern during the Feasibility Scoping Meeting (FSM), Alternative Formulation Briefing (AFB) or any Issue Resolution Conferences (IRCs).

D. Funding. Cost-shared feasibility study funds will be used to perform the ITR.

- i. The Chicago District will setup and provided labor funding for members of the ITRT. The Study Manager will work with the ITR manager to ensure that adequate funding is available and is commensurate with the level of review needed. A total of \$26,000 has been budgeted for the ITR of the feasibility study products.

E. Timing and Schedule. Draft schedule for ITR is laid out below:

- i. A minimum of three ITR reviews have been scheduled during the feasibility study. Additional ITR review of individual products could be added during the development of the feasibility study. Early coordination with the ITRT will be done to ensure availability of ITRT members. The team will normally be given two weeks time for review.
- ii. The ITR schedule foreseen at this point is shown in the timeline below.

ITR Product	Review Schedule
Feasibility Scoping Meeting (FSM) Documentation	4 th Quarter – FY2008
Alternative Formulation Briefing (AFB) Documentation	4 th Quarter – FY2009
Draft Final Feasibility Report & NEPA Document	3 rd Quarter – FY2010

F. Certification. To fully document the ITR process, a statement of technical review will be prepared and signed by all ITR reviewers once issues raised by the reviewers are addressed to the review team's satisfaction. Indication of this concurrence will be documented by the signing of a certification statement, which is attached to draft final report Quality Control Review Report (QCRR). A summary report of all comments and responses will follow the statement and accompany the report throughout the report approval process as part of the QCRR.

5. EPR Plan.

A. General. The decision as whether or not a decision document requires an external peer review is based upon the level of project risk and magnitude. A decision is made to perform an EPR by vertical team consensus (involving district, major subordinate command and Headquarters members) when the covered subject matter is novel, is controversial, is precedent setting, has significant interagency interest, or has significant economic, environmental, and social effects to the nation. Once the decision is made to perform an EPR on a decision document is made, an EPR Manager shall be designated from the respective PCX to manage the EPR process. At this time the decision as to whether or not an EPR will be performed on this study has not been made. The feasibility study has recently begun and information needed to determine whether or not an EPR is necessary is not available at this point. This decision will be revisited during the Feasibility Scoping Meeting (FSM) tentatively scheduled for 1st Quarter – FY2009

when more information regarding project risk and magnitude are known. A revised Peer Review Plan including the District's recommendation on the EPR decision will be provided with the FSM documentation. The ultimate decision as to whether or not an EPR will be needed will be made after the FSM with the development of the Policy Guidance Memorandum documenting the meeting and vertical team consensus. However, for the development of the Project Management Plan it was assumed that an EPR would be necessary.

B. Funding. Federal funds will be used to perform the EPR if one is necessary.

- i. The Chicago District will provide funding to the PCX to manage the EPR. The Study Manager will work with the EPR manager to ensure that adequate funding is available and is commensurate with the level of review needed. A total of \$50,000 has been budgeted for an EPR of the feasibility study products if needed.

C. Timing and Schedule. Draft schedule for the EPR if one is necessary is laid out below:

- i. One EPR review has been scheduled during the feasibility study. Additional EPR review of individual products could be added during the development of the feasibility study. Early coordination with the PCX will be done to ensure availability of EPR members. The EPR team will normally be given one month for review.
- ii. An EPR on the Draft Final Feasibility Report and NEPA Document would begin during the final ITR review after comments are received. Major ITR comments will be addressed prior to commencing the EPR. The schedule foreseen at this point is 4th Quarter – FY2010.

6. Model Certification.

The Bubbly Creek Feasibility Study will utilize numerical models to perform project analyses. In the development of the Project Management Plan for the feasibility study, hydrologic, hydraulic and water quality models were selected for use in evaluating restoration plans and their impact to channel conveyance and water quality. These models include, HSPF (hydrologic model developed by USGS), SWMM (pipe network hydraulic model developed by USEPA), TNET (tunnel hydraulic model developed by USACE), CH3D (channel hydraulic model developed by USACE), CEQUAL-ICM (channel water quality model developed by USACE). The study team is currently evaluating options for evaluating habitat outputs and has not selected a tool to be used during the feasibility study. It is unclear which of the hydrologic, hydraulic and water quality numerical models utilized for the study will require certification/approval. The District will work with the ECO-PCX and the vertical team on model certification/approval requirements.

Any necessary model certification/approval will be completed before the Feasibility Report is submitted for review and approval.

7. Public and Agency Review.

In addition to the public access provided to the Peer Review Plan on the District and respective PCX web sites, the District will solicit public input regarding elements of a potential Recommended Plan through the project website, newsletters and other avenues of outreach. Public and agency review of the Draft Final Feasibility Report and NEPA Document will occur simultaneously with the EPR if one is necessary. If an EPR is not necessary, the schedule for public and agency review will be the same. A public scoping meeting will be held upfront in the study process to help establish project goals and opportunities. A second public scoping meeting is to be held during the public review period of the draft report and NEPA document to elicit additional comments. Public comments on review of the draft report and NEPA document and at any public meetings held during the planning process will be included in the Final Report and will be made available to the review team.

8. PCX Coordination.

The appropriate PCX for this document is the National Ecosystem Planning Center of Expertise (ECO-PCX) located within MVD. This review plan will be submitted through the PDT District (LRC) Planning Chief, to the PCX Director, Rayford Wilbanks, and PCX Deputies, Dr. David Vigh and Susan Smith, for coordination and approval. The PCX will be engaged throughout the feasibility study process. Once enough necessary information is gathered to decide whether an EPR is needed, the PCX will help facilitate the decision process through the vertical team. Once the PRP is finalized and approved, the approved review plan will be posted to the PCX website.

9. Approvals.

The PDT will carry out the review plan as described. The Study Manager will submit the plan to the PDT District Planning Chief for approval. Coordination with PCX will occur through the PDT District Planning Chief. Signatures by the individuals below indicate approval of the plan as proposed.

	Date
Study Manager	
Chicago District	

Chief, Planning Branch Chicago District	Date
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Deputy for Project Management Chicago District	Date
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Chief, Planning and Policy Division Great Lakes and Ohio River Division	Date
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